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| ANTONELLI, TERRY, STOUT & KRAUS, LLP | | | HUNG, MINO HUNG | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|--------------------------------------|
| Office Action Summary | Application No. 10/586,305 | Applicant(s) TANAKA ET AL. |
| | Examiner MING HUNG HUNG | Art Unit 2829 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 14 July 2006.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-17 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 14 July 2006 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449)
Paper No(s)/Mail Date 07/14/06, 10/16/06

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5) Notice of Informal Patent Application

6) Other: _____

DETAILED ACTION

Priority

1. Examiner acknowledged that this application 10/586,305 filed on 07/14/06 claims the benefit of the foreign application JP 2004-008313 filed on 01/15/04. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:

- The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
- Numeral 40 refers to both heater and anisotropic conductive adhesive layer (see page 2, line 18 and page 9, lines 20-21). "a heater 40" should read "a heater" or a different numeral should be given to the heater to avoid confusion. Appropriate correction is required.

Drawings

3. The drawings are objected because:

- Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
- Failing to comply with 37 CFR 1.84(p)(5) because i.) they do not include the following reference sign(s) mentioned in the description: 600 (see page 2, line 22). ii.) they include the following reference character(s) not mentioned in the description: 11 (Fig. 2b).

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 2-7, 11, 15-17 are objected to because:
 - a. As to claim 2, line 19, "the transport part" lacks antecedent basis. Examiner interprets "the transport art" being "the holding part".
 - b. As to claims 3-7, they are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 3-7 depend on claim 1, which is a process claim, therefore should further the process itself. However, claims 3-7 do not further limit the process, rather, they further limit the apparatus used in the process. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in

independent form.

c. As to claim 11, line 9, "wherein the gaps between the first and second circuit layers be sealed by the thermal compression" should read "wherein the gaps between the first and second circuit layers are sealed by the thermal compression" to avoid confusion.

d. As to claim 15, line 2, "the conductive layer" lacks antecedent basis. Since claim 15 has to further limit the preceding claim, Examiner interprets "the conductive layer" being "the first or second circuit layer" based on page 17, lines 13-14 in the specification.

e. As to claim 16, line 6, and claim 17, line 14, "the first and second metallic films" lack antecedent basis. Examiner interprets "the first and second metallic films" being "the first and second circuit layers".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

a. A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 5-9, 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Aoyama et al. (US Patent No. 7,278,203 B2 and Aoyama hereinafter).

6. As to claims 1-2, 5-9, 13-14, Aoyama discloses:

a manufacturing method for an electronic device (the combination of chip 2 and work 4 as shown in Figs. 2) **that has IC elements** (chips 2, Figs. 1-2) **having an electrode formed on both faces thereof** (the left face and right face at the bottom of the chip 2 must have an electrode that correspond to the left and right antenna terminal 42, respectively, in order to make communication via the conductive resin as disclosed in col. 5, lines 39-41, 45-49) **and a first** (the left antenna terminal 42 and the corresponding antenna 41 as shown in Fig. 2B) **and second circuit layer** (the right antenna terminal 42 and the corresponding antenna 41 as shown in Fig. 2B), **comprising: a step of electrically connecting the electrode of one side of the IC elements with the first circuit layer, electrically connecting the electrode of the other side of the IC elements with the second circuit layer and electrically connecting the first and second circuit layers; and a step of positionally aligning the connection surfaces of the IC elements and either one of the circuit layers while continuously supplying the IC elements and either one of the circuit layers separately** (col. 5, lines 38-57; Figs. 1-2) **[claim 1].**

where the step of continuously supplying the IC elements comprises: a step of individually holding an IC element (chip 2, Fig. 1) in an IC element holding part (end-effectors 71-76, Fig. 1) of an IC elements transport mechanism having not

less than one IC elements holding part (transport engine 6 has six end-effectors 71-76 as shown in Fig. 1); **and a step of delivering the IC element thus held by running the transport part of the transport mechanism** (transport engine 6 with end-effectors 71-76 rotates to deliver the chips 2 onto works 4 as shown in Fig. 1, also see paragraph 4a above) **[claim 2];**

where the step of holding an IC element (chip 2, Fig. 1) **individually in the IC element holding part** (end-effectors 71-76, Fig. 1) **of the transport mechanism** (transport engine 6, Fig. 1) **uses an IC elements alignment/supply mechanism to facilitate holding of an individual IC element by the IC element holding part** (coaxial revolver 10, Fig. 1) **[claim 5];**

where the IC elements alignment/supply mechanism is a linear feeder (coaxial revolver 10 delivers chip 2 in linear fashion when chip 2 contacts with work 4 as shown in Fig. 1) **[claim 6];**

where the IC elements alignment/supply mechanism is a high frequency alignment type feeder (col. 3, lines 21-27) **[claim 7];**

where the electrical connection of an electrode of the IC elements and at least one of the first or the second circuit layers is made via an anisotropic conductive adhesive layer (col. 5, lines 45-47) **[claim 8];**

a step of connecting at once, the electrodes of the IC elements and at least one layer from among the first or the second circuit layers, where the step is after the step of positionally aligning the connection surfaces (the left and right face containing the electrodes at the bottom of the chip 2 must be aligned with the antenna

terminals 42 right before the connection in order to position the electrodes at the appropriate place; col. 5, lines 38-57; Figs. 1-2) [claim 9];

where a conductive layer is formed on the surface of at least one from among the first or the second circuit layers (col. 5, lines 45-47) [claim 13];
where at least one from among the first or the second circuit layers is provided with a slit (the space between the metals in antenna 41 as shown in Fig. 2B) [claim 14].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama in view of Keen et al. (US Patent No. 6,732,498 B2 and Keen hereinafter)

9. As to claims 3 and 4, although Aoyama discloses a substantial features of the claimed invention (see paragraphs above), it fails to disclose:

where the IC elements transport mechanism is disc shaped [claim 3];
where the IC element holding part is formed as a notch shape [claim 4].

Nonetheless, these features are well known in the art and would have been an obvious modification of the apparatus disclosed by Aoyama, as evidenced by Keen.

Keen discloses a vacuum assisted cut-and-seal apparatus with transfer wheel comprising:

where the IC elements transport mechanism is disc shaped (rotatable transfer wheel 10, Fig. 2) **[claim 3]** to reduce the size of the transport mechanism;

where the IC element holding part is formed as a notch shape (suction portion 12a, Fig. 2) **[claim 4]** to receive the IC elements using a vacuum.

Given the teaching of Keen, a person having ordinary skills in the art at the time of the invention would have readily recognized the desirability and advantages of modifying the apparatus disclosed by Aoyama by employing the well known or conventional features of disc-shaped transport mechanism and notch-shaped holding part, such as disclosed by Keen, in order to save space and receive the IC elements firmly without falling off during transportation.

10. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama in view of Moskowitz et al. (US Patent No. 5,528,222 and Moskowitz hereinafter).

11. As to claim 10, although Aoyama discloses a substantial features of the claimed inventions (see paragraphs above), it fails to disclose:

where the method in that the electrode of the IC elements and at least one layer from among the first or the second circuit layers is connected at once is realized by thermal compression [claim 10];

Nonetheless, this feature is well known and would have been an obvious modification of the apparatus disclosed by Aoyama, as evidenced by Moskowitz.

Moskowitz discloses a radio frequency circuit and memory in thin flexible package comprising:

where the method in that the electrode of the IC elements and at least one layer from among the first or the second circuit layers is connected at once is realized by thermal compression (col. 4, lines 13-16; Fig. 2) [claim 10];

Given the teaching of Moskowitz, a person having ordinary skills in the art at the time of the invention would have readily recognized the desirability and advantages of modifying the apparatus disclosed by Aoyama by employing the well known of conventional feature of thermocompression bonding technique, such as disclosed by Moskowitz, in order to connect the chip to the antenna.

12. Claim 12 is under 35 U.S.C. 103(a) as being unpatentable over Aoyama.

Aoyama discloses a substantial features of the claimed the invention (see paragraphs above), and further disclose:

a step of making a continuum of the plurality of the IC elements (col. 5, lines 42-45; when the chips 2 are connected onto works 4 in the form of a tape, which is continuum, the chips 2 on the works 4 are also continuum), where the step is after the

step of connecting, at once, a plurality of the IC elements with at least one from among the first or the second circuit layers (the continuum is formed after chips 2 and works 4 are connected).

However, Aoyama fails to disclose:

a step of cutting a continuum of the plurality of the IC elements into individual pieces.

Nonetheless, it would have been an obvious modification to a person having ordinary skills in the art at the time of the invention to cut the continuum of the plurality of the IC elements on the first and second circuit layers into individual pieces in order to use each RFID on the desired article.

13. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama in view of Moskowitz as applied to claim 10, and further in view of Usami (US PGPUB 2001/0012645 A1).

14. As to claim 11, although Aoyama discloses substantial features of the claimed invention (see paragraphs above), it fails to disclose:

where the gaps between the first and second circuit layers be sealed by the thermal compression [claim 11].

Nonetheless, this feature is well known in the art and would have been an obvious modification of the apparatus disclosed by Aoyama, as evidenced by Moskowitz and Usami.

Moskowitz discloses a radio frequency circuit and memory in thin flexible package comprising:

where the first and second circuit layers are connected by thermal compression “without sealing the gaps between” (col. 4, lines 13-16; Fig. 2).

Further, Usami discloses a semiconductor device and the manufacturing method for packaging a thin semiconductor chip in an economical manner comprising:

where the gaps between the first and second circuit layers be sealed by “a conductive adhesive layer without thermal compression” (col. 4, [0049], lines 7-13; Fig. 10).

Given the teachings of Moskowitz and Usami, a person having ordinary skills at the time of the invention would have readily recognized the desirability and advantages of modifying the apparatus disclosed by Aoyama by employing the well known or conventional features of having the gaps between the first and second circuit layers be sealed by the thermal compression (i.e. sealing the gaps with a conductive adhesive layer by pre-coating the left and right antenna terminal 42 and the gap between with a conductive adhesive layer, then thermal compressing the device in direction 56 as shown in Fig. 1 of Aoyama), in order to connect the chip to the antenna and prevent contaminants from entering.

15. As to claim 15, although Aoyama discloses substantial features of the claimed invention, it fails to disclose:

where the conductive layer includes aluminum.

Nonetheless, this feature is well known in the art and would have been an obvious modification of the apparatus disclosed by Aoyama, as evidenced by Usami.

Usami discloses a semiconductor device and the manufacturing method for packaging a thin semiconductor chip in an economical manner comprising:

where the conductive layer includes aluminum (col. 3, [0039], lines 34-36, also see paragraph 4d above).

Given the teaching of Usami, a person having ordinary skills in the art at the time of the invention would have readily recognized the desirability and advantages of modifying the apparatus disclosed by Aoyama by employing the well known or conventional feature of aluminum, such as disclosed by Usami, in order to form a metal antenna.

16. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama in view of Moskowitz and Usami as applied to claim 11, and further in view of Green et al. (US PGPUB 2003/0136503 A1 and Green hereinafter).

17. As to claims 16-17, although Aoyama in view of Usami and Moskowitz discloses substantial features of the claimed invention, it fails to disclose:

where at least one from among the first and second metallic films is supported on a base substrate comprised of an organic resin, and that this organic resin be selected from among polyvinyl chloride (PVC), acrylonitrile butadiene styrene (ABS), polyethylene terephthalate (PET), polyethylene

terephthalate glycol (PETG), polyethylene naphthalate (PEN), polycarbonate resin (PC), biaxial polyester (O-PET), or polymide resin [claim 16];

where either one of the first or the second metallic films is supported on a base substrate comprised of paper [claim 17].

Nonetheless, these features are well known in the art and would have been an obvious modification of the apparatus disclosed by Aoyama in view of Usami and Moskowitz, as evidenced by Green.

Green discloses RFID label technique comprising:

where at least one from among the first and second metallic films is supported on a base substrate comprised of an organic resin, and that this organic resin be selected from among polyvinyl chloride (PVC), acrylonitrile butadiene styrene (ABS), polyethylene terephthalate (PET), polyethylene terephthalate glycol (PETG), polyethylene naphthalate (PEN), polycarbonate resin (PC), biaxial polyester (O-PET), or polymide resin (col. 11, [0138]) [claim 16] to form a flexible substrate;

where either one of the first or the second metallic films is supported on a base substrate comprised of paper (col. 4, [0036]) [claim 17] to form flexible substrate.

Given the teaching of Green, a person having ordinary skills in the art at the time of the invention would have readily recognized the desirability and advantages of modifying the apparatus disclosed by Aoyama in view of Usami and Moskowitz by employing the well known or conventional features of using organic resin or paper as

the substrate, such as disclosed by Green, in order to be easily cutted and also have dimensional and thermal stability.

Contact Information

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ming Hung Hung whose telephone number is (571) 270-3832. The examiner can normally be reached on Monday through Friday 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ming Hung Hung/
Examiner, Art Unit 2829

04/07/08

/Ha T. Nguyen/
Supervisory Patent Examiner, Art Unit 2829